

TECHNICAL NOTES

U.S. DEPARTMENT OF AGRICULTURE

NATURAL RESOURCES CONSERVATION SERVICE

STATE OFFICE

STILLWATER, OKLAHOMA 74074-2655

ECOLOGICAL SCIENCES TECHNICAL REFERENCES

FOR IN SERVICE USE ONLY

BIOLOGY OK-26
(Rev. 8/97)

August 21, 1997

Re: List of Forbs, Legumes, Trees, and Shrubs Best Suited for Wildlife Under the Conservation Reserve Program (CRP), and other considerations.

This technical note updates the previously released Biology OK-26 dated July 17, 1997. The seeding rate of some CP1 legumes have been adjusted and additional information has been provided relative to adaptation and other establishment factors. Planting rates for native forbs and legumes have also been adjusted.

Ranking Factor 1 (N1), Subfactor A, of the National Ranking Factor Worksheet for CRP assigns points based on wildlife benefits of established vegetative cover.

The attached list of forbs, legumes, trees, and shrubs have been determined to be best suited for wildlife on CRP lands in Oklahoma. This list is used for practices CP1, CP2, CP3, CP3A, CP4B, CP4D, CP10 (native plantings only), CP11, CP19, CP20 and CP23. The decision to assign points or include alternative species in a planting that are not included on this list will be made on a case-by-case basis. Submit requests to consider alternative species to the State Resource Conservationist.

This technical note will be used for forb and/or legume guidance found in the Range Planting (550) and Pasture Planting (512) standard and specifications for the CRP program. This applies to new plantings and for cover enhancement of native plantings. Cover enhancement plantings are considered plantings into fully established native grass stands. Cover enhancements must be drilled or otherwise planted in a manner that will place the seed in mineral contact with the soil. All plantings must be planned using the 100% full seeding rate as the basis and meet the standard and specifications for Range Seeding (550) in all other aspects. All calculations for seed mixtures will be based on a multiplication of the full seeding rate by the percentage desired in the mixture. This technical note also details considerations for delayed planting.

Filing Instructions: Remove OK-26 dated July 17, 1997, and replace with the revised OK-26 dated August 21, 1997, in the Technical Notes Manual under Biology. Make pen and ink change to Biology Technical Note Index to list OK-26 dated August 21, 1997.

/s/ Kevin D. Norton acting for

RONNIE L. CLARK
State Conservationist
Enclosures

DIST: A, F

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CP1 - INTRODUCED FORBS AND LEGUMES 1/ 2/

Select legumes from the following list to be established with introduced grasses. Plantings must include at least one perennial. Additional annual, biennial, or perennial legumes can be added to the mix at the landowner's option. When more than one species of legumes are included, seeding rates can be prorated accordingly. A perennial native legume can substitute for an introduced legume. Plantings in CP1 will be done in accordance with Pasture Planting (512).

LEGUMES

SPECIES	LIFE SPAN N 3/	SEEDING RATE PLS LBS./AC	INOCULUM TYPE /4	AREA OF ADAPTATION
alfalfa (can be the grazing varieties of alfalfa's)	P	2-4	A	Statewide
birdsfoot trefoil	P	2	K	Fertile well drained soils, 26' rainfall or greater, can tolerate moderate salinity. Not persistent with warm season grasses.
'Cicer' milkvetch	P	5	Astragalus	Greater than 18" precipitation, tolerates slight acidity to moderate alkalinity.
red clover	B	4-6	B	NE, SE - heavy soils med-high fertility and fertile sandy loamy high in available phosphorus.
sainfoin	P	20	F	Neutral to calcareous soils
white clover	P	3-4	B	SE, NE, first and second banks, clay and loamy soils and on more productive upland soils.
arrowleaf clover	A	3-5	0	NE, SE, well drained soil,
Austrian Winter Pea	A	20	C	Western part of state, intolerant of low pH soils.
cowpeas	A	10	EL	Statewide
crimson clover	A	10	R	NE, SE - well drained soils except high calcareous.
hairy vetch	A	10	C	Statewide - well drained soils.
Korean lespedeza	A	10	EL	NE, SE
common lespedeza		10	EL	SE - acid soils.
rose clover	A	3	WR	18 - 25 inch rainfall, not on wet or poorly drained soils.
sweetclover	A & B	2	A	Central, SW, NW - well drained soils.

- 1/ Legumes can be planted at the same time the base grass is planted.
- 2/ Use current soils test to determine if there are proper levels of phosphorus and potassium. Lime to raise pH to at least 6.
- 3/ A = Annual B = Biennial P = Perennial
- 4/ These inoculum types are specific to each species.

CP2 - PERMANENT NATIVE GRASSES

Plantings must include a combination of forbs and legumes totaling 10 percent of the full seeding rate. Of this 10 percent, at least 5 percent must be native legumes, and at least 3 percent perennial native forbs. Of the five percent native legumes, three percent must be perennial and two percent can be annual. The remaining balance of two percent can be introduced legumes from the CPI category (for enhancements, double the rate that is listed in CPI). (Refer to example seed mixture calculations.)

LEGUMES - includes proper inoculant

SPECIES	LIFE SPAN	FULL SEEDING RATE (PLS LB./AC)	SEEDING RATE (PLS LBS./AC) FOR STAND ENHANCEMENT PLANTINGS	AREA OF ADAPTATION
leadplant	perennial	2.0	4.0	statewide
tephrosia	perennial	4.0	8.0	statewide
prairie clover	perennial	4.0	8.0	statewide
Illinois bundleflower	perennial	4.0	8.0	statewide
roundhead lespedeza	perennial	2.0	4.0	eastern, western
tickclover	perennial	2.0	4.0	statewide
trailing wildbean	perennial	2.0	4.0	statewide
western indigo	perennial	2.0	4.0	statewide
catclaw sensitivebriar	perennial	2.0	4.0	statewide
prairie acacia	perennial	2.0	4.0	statewide
partridge pea	annual	4.0	8.0	statewide
least snoutbean	perennial	2.0	4.0	statewide

FORBS

SPECIES	LIFE SPAN	FULL SEEDING RATE (PLS LBS./AC)	SEEDING RATE (PLS LBS./AC) FOR STAND ENHANCEMENT PLANTINGS	AREA OF ADAPTATION
Englemann daisy	perennial	4.0	8.0	statewide
Pitcher's sage	perennial	4.0	8.0	eastern, western
Maximillian sunflower	perennial	2.0	4.0	statewide
awnless bushsunflower	perennial	4.0	8.0	statewide
compassplant	perennial	2.0	4.0	eastern, western
gayfeather	perennial	4.0	8.0	statewide
blacksampson	perennial	2.0	4.0	statewide
pale echinacea	perennial	2.0	4.0	eastern

CP3 - TREE PLANTING (PINE)

Refer to state standard and specifications for Range Seeding (550), and the list of forbs and legumes described in this biology technical note under CP2 for native herbaceous plantings best suited for wildlife in pine plantings. Native shrub plantings best suited for wildlife in pine plantings should be selected from the following list and planted in accordance with state standard and specifications for Hedgerow Planting (422) or Tree Planting (612).

SHRUB SPECIES

American plum	Chickasaw (sand) plum
skunkbush sumac	chokecherry
bush honeysuckle	bush lespedeza (bicolor)
leadplant	indigobush
fourwing saltbush	

CP3A - HARDWOOD TREE PLANTING

The following list of hardwood trees includes both hard and soft mast producing species. Hardwood trees not included on this list will be treated as non-mast producing species and/or not among the best suited species for wildlife.

HARD MAST SPECIES

bur oak	pin oak
willow oak	water oak
Shumard oak	overcup oak
sawtooth oak	northern red oak
southern red oak	white oak
black walnut	pecan
SOFT MAST SPECIES	
hackberry	mulberry
green ash	lacebark elm
maple	persimmon
chittamwood	cherry
Bois D' Arc	

CP4B - PERMANENT WILDLIFE HABITAT (CORRIDORS) NON-EASEMENT

Refer to state standard and specifications for Range Seeding (550), and the list of forbs and legumes described in this biology technical note for native herbaceous plantings best suited for wildlife in the area. Refer to the list of native shrubs described under CP3, and the list of native mast producing hardwood trees described under CP3A of this technical note for shrubs and/or tree species best suited for wildlife in the area. Tree and shrub plantings should be made in accordance with state standard and specifications for Hedgerow Planting (422) or Tree Planting (612).

CP4D - PERMANENT WILDLIFE HABITAT NON-EASEMENT

Consult the Oklahoma Department of Wildlife Conservation (ODWC) biologist before developing plans for this practice. Native grasses, forbs, legumes, shrubs, and trees planted under this practice will typically be selected from the plants described in this technical note.

CP10- VEGETATIVE COVER (NATIVE GRASS ALREADY ESTABLISHED)

Refer to the plant species information described under CPI and/or CP2 of this technical note when planning stand enhancement. For stand enhancements of native plantings with forbs and legumes, the planting dates are Feb. 1 - March 31.

CP11- VEGETATIVE COVER (TREES ALREADY ESTABLISHED)

Refer to the plant species information described under CP3A for stand enhancements.

CP19- ALLEY CROPPING

Refer to the plant species information described under CPI, CP2 and CP3 of this technical note when planning this practice.

CP23- WETLAND RESTORATION

Farmed Wetland (FW), wetlands farmed under natural conditions (W), and Prior Converted Wetlands (PC) where hydrology is restored, can be re-vegetated through natural regeneration. All upland buffer areas and PC's where hydrology is not restored, should be re-vegetated using native herbaceous vegetation (as listed in CP2, CP3A) trees or shrubs listed in the technical note.

ESTABLISHMENT CRITERIA

Due to the nature of forbs and legumes to be somewhat cyclic and weather dependent, establishment criteria will be evaluated on the base grass and the documentation that forbs and legumes were included into the planting.

PLANTING ALTERNATIVES

Several choices for establishment of permanent cover are being offered due to the need to carry out weed control to establish the base grass, the availability of seeds, and the potential for forbs and legumes to be injured from carryover cropland herbicides. These choices may change as program policy is revised.

- Plant all the grasses, forbs, and legumes together; use mowing or an approved herbicide that is compatible with forbs and legumes.
- Plant all the base grass the first year. Use regular herbicides to establish, then drill the forbs and legumes in the fall (Sept.1 to Oct. 31) or the second year (Feb. 1 to Mar. 31). Prior to planting the forbs and legumes, cover modification may be needed in the form of mowing or prescribed burning to allow the drill to place the forb and legume seed in direct contact with the soil. (Refer to Range Planting Job Sheets 550-01, 02 and 03 dated March 1997, for additional information.)

**EXAMPLE
CALCULATION WORKSHEET FOR SEED MIXTURES**

SPECIES	FULL PLS SEEDING RATE	PERCENT OF MIX	LBS. PLS/AC FOR EACH SPECIES	ACRES TO BE PLANTED	TOTAL PLS LBS.
GRASSES					
big bluestem	6.0	20	1.2	60	72
little bluestem	3.4	15	.51	60	30.6
Indiangrass	4.5	20	.9	60	54
switchgrass	3.0	15	.45	60	27
sideoats grama	4.5	10	.45	60	27
blue grama	2.0	10	.2	60	12
FORBS & LEGUMES					
Illinois bundeflower	4.0	3	.12	60	7.2
partridge pea	4.0	2	.08	60	4.8
Maximillian sunflower	2.0	3	.06	60	3.6
sweetclover	2.0	2	.04	60	2.4
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WOODY SPECIES (Refer to Woodland Job Sheets)

EXAMPLE CALCULATION FOR STAND ENHANCEMENT PLANTINGS

SPECIES	FULL PLS SEEDING RATE	PERCENT OF MIX	LBS. PLS/AC OF EACH SPECIES	ACRES TO BE PLANTED	TOTAL PLS LBS.
FORBS & LEGUMES					
Illinois bundeflower	8.0	3	.24	60	14.4
partridge pea	8.0	2	.16	60	9.6
Maximillian sunflower	4.0	3	.12	60	7.2
sweetclover	4.0	2	.08	60	4.8
		10			

CALCULATION WORKSHEET FOR SEED MIXTURES

SPECIES	FULL PLS SEEDING RATE	PERCENT OF MIX	LBS. PLS/AC OF EACH SPECIES	ACRES TO BE PLANTED	TOTAL PLS LBS.
<u>GRASSES</u>					
<u>FORBS & LEGUMES</u>					

WOODY SPECIES (Refer to Woodland Job Sheets)

I certify that this mixture meets the NRCS FOTG standard and specifications.

NRCS Employee: _____

Title: _____

Date: _____